

AMENDMENT IN RESPONSE TO
(OFFICE ACTION DATED DECEMBER 12, 2002)

C1
a well region of the second conductivity type formed in the semiconductor material, the well region contacting the isolation region, being spaced apart from the first region, having a dopant concentration that is less than the dopant concentration of the first region, and not contacting a region of the second conductivity type that has a dopant concentration that is greater than the dopant concentration of the well region; and

a second region of the first conductivity type formed in the well region, the second region contacting the isolation region and having a dopant concentration, the first region and the second region lying on opposite sides of the isolation region, the second region being connected to an electrical pad.

Please add the following new claims:

C2
--19. The structure of claim 17 wherein the first region is positioned such that no other region having the first conductivity type and a dopant concentration greater than the well region lies between the first region and the isolation region.

20. The structure of claim 19 wherein the first region is connected to ground.

21. An ESD protection structure formed in a semiconductor material of a first conductivity type, the structure comprising:

an isolation region formed in the semiconductor material;

a first region of a second conductivity type formed in the semiconductor material, the first region having a dopant concentration;

a well region of the second conductivity type formed in the semiconductor material, the well region contacting the isolation region, being spaced apart from the first region, having a dopant concentration that is less than the dopant concentration of the first region, and not including a region of the second conductivity type that has a dopant concentration that is substantially greater than the dopant concentration of the well region; and

a second region of the first conductivity type formed in the well region, the second region contacting the isolation region and having a dopant concentration, the second region being connected to an electrical pad, the first region being positioned such that no other

region having the first conductivity type and a dopant concentration greater than the well region lies between the first region and the isolation region.

22. The structure of claim 21 wherein the first region and the second region lie on opposite sides of the isolation region.

23. The structure of claim 22 wherein the semiconductor material has a dopant concentration that is less than the dopant concentration of the second region.

C2
Cont.
24. A structure formed in a semiconductor material of a first conductivity type, the structure comprising:

an amplifier having an input; and
a protective diode, the diode having:

an isolation region formed in the semiconductor material;
a first region of a second conductivity type formed in the semiconductor material, the first region having a dopant concentration;
a well region of the second conductivity type formed in the semiconductor material, the well region contacting the isolation region, being spaced apart from the first region, having a dopant concentration that is less than the dopant concentration of the first region, and not including a region of the second conductivity type that has a dopant concentration that is substantially greater than the dopant concentration of the well region;
and

a second region of the first conductivity type formed in the well region, the second region contacting the isolation region and having a dopant concentration, the second region being connected to an electrical pad, the second region being connected to the input of the amplifier, the first region being positioned such that no other region having the first conductivity type and a dopant concentration greater than the well region lies between the first region and the isolation region.

25. The structure of claim 24 wherein the first region and the second region lie on opposite sides of the isolation region.

26. The structure of claim 25 wherein the semiconductor material has a dopant concentration that is less than the dopant concentration of the second region.

27. The structure of claim 26 wherein the first region is connected to a power supply line.

C2
cont.

28. The structure of claim 27 and further comprising:
a protection diode, the protection diode having:
an isolation region formed in the semiconductor material;
a first region of the second conductivity type formed in the semiconductor material, the first region of the protection diode having a dopant concentration;
a well region of the second conductivity type formed in the semiconductor material, the well region of the protection diode contacting the isolation region of the protection diode, being spaced apart from the first region of the protection diode, having a dopant concentration that is less than the dopant concentration of the first region of the protection diode, and not including a region of the second conductivity type that has a dopant concentration that is substantially greater than the dopant concentration of the well region of the protection diode, and
a second region of the first conductivity type formed in the well region of the protection diode, the second region of the protection diode contacting the isolation region of the protection diode and having a dopant concentration, the first region of the protection diode being connected to the input of the amplifier.

29. The structure of claim 24 and further comprising:
a protection diode, the protection diode having:
an isolation region formed in the semiconductor material;
a first region of the second conductivity type formed in the semiconductor material, the first region of the protection diode having a dopant concentration;
a well region of the second conductivity type formed in the semiconductor material, the well region of the protection diode contacting the isolation region of the

09/747,848

PATENT

AMENDMENT IN RESPONSE TO
(OFFICE ACTION DATED DECEMBER 12, 2002)

protection diode, being spaced apart from the first region of the protection diode, having a dopant concentration that is less than the dopant concentration of the first region of the protection diode, and not including a region of the second conductivity type that has a dopant concentration that is substantially greater than the dopant concentration of the well region of the protection diode; and

C2 a second region of the first conductivity type formed in the well region of the protection diode, the second region of the protection diode contacting the isolation region of the protection diode and having a dopant concentration, the first region of the protection diode being connected to the input of the amplifier.

30. The structure of claim 29 wherein the second region is connected to a ground line.